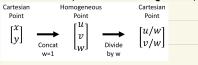


Lecture 2.

①持Cartesian point → Homogeneous point



②Triple Equivalent 和 double equal 的识别.

"三"只要满足捐同相同而即可

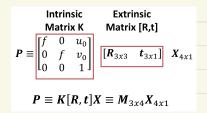
多使用Homogeneous Coordi自社之

>> 內方 相交.使用 l× m 可求交点 >> 过两点的- 根线. p× 2 可得线 >> 点P 在 line e 上则 e⁷p=0.

4>点的Translation.

$$\begin{bmatrix} u' \\ v' \\ w' \end{bmatrix} = \begin{bmatrix} r_{11} & r_{12} & t_x \\ r_{21} & r_{22} & t_y \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} u \\ v \\ w \end{bmatrix}$$

Typical Perspective Model



f: focal length.

U. Vo: principal point.

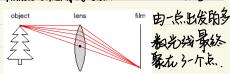
日 orthographic 模式

$$\mathbf{P} = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 0 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix}$$

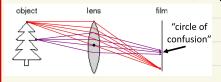
没有 perspective Iffect. (省略Z).

© Pinhole Model的理想状态和愈状态。

1>Pinhole会使成像blur.解决方法,Lens

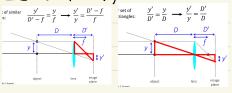


ン lens 的缺陷: 院一个距离可以"in focus", 其他距离所成的像都是"circle of confusion"



DThin lens Formula:

通过两组相似三角形:



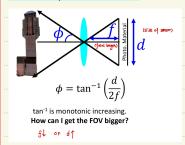
貔纷: 古十古=羊

O如何面过改变aperture大小改变 DOF

aperture越水,越清晰、DOF越大,越晴。 aperture越大,越模糊、DOF越小、越亮

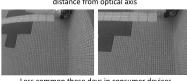
)使aperture 艰趣咖啡清晰.购涉购 行射: Diffraction.

O. Field of View (FOV)



@ Lens Flaws: Radial Distortion

Lens imperfections cause distortions as a function of distance from optical axis



Less common these days in consumer devices

ン)Vignetting:画面也级的光线更需数 挡住。

37